CLAIMS

The invention claimed is:

1. A system for generating a target geometric model from a source geometric model, comprising:

a server having processing circuitry and an operation manager configured to compare source geometric data of each of a plurality of features in a source geometric model with target geometric data of respective features in a target geometric model, and operative to identify discrepancies in respective features therebetween;

said server configured to rectify discrepancies in a feature after generating the feature and prior to generating another feature among the plurality of features;

a communication link;

at least one client communicating with the server over the communication link; and

an interrupt interface provided by one of the at least one client and the server and operative to notify a user of the server's inability to automatically generate an accurate representation of a feature of the source geometric model in the target geometric model.

2. The system of claim 1, wherein the server is configured to iterate, a predetermined number of times, the process of generating a feature using alternative measurements during each iteration.

3. The system of claim 2, wherein the interrupt interface notifies a user of the server's inability to rectify a discrepancy in a feature after performing the predetermined number of iterations to accurately generate the feature.

4. The system of claim 1, wherein the interrupt interface notifies a user of the presence of any identified discrepancies that are not automatically corrected by the server in response to comparing the geometric data.

5. The system of claim 1, wherein the operation manager includes a computer readable medium having computer programmable logic embodied therein which when executed by the processing circuitry translates each feature of a source geometric model received from a source within a client/server environment to a respective feature in a target geometric model.

6. The system of claim 1, wherein the source geometric data is derived from the source geometric model and the target geometric data is derived from the target geometric model.

7. The system of claim 5, wherein the computer readable medium comprises a memory coupled to the processing circuitry to store the source geometric model and the target geometric model.

8. The system of claim 5, wherein the computer programmable logic is associated with the processing circuitry and the interrupt interface, the computer

programmable logic including a production control module operative to implement staged translation of the source geometric model into the target geometric model.

9. The system of claim 8, wherein the staged translation comprises:

computer programmable logic for extracting comparison reference data from the source geometric model in a source computer aided design (CAD) system;

computer programmable logic for generating a target geometric model in a target CAD system;

computer programmable logic for comparing reference data from the source geometric model with corresponding reference data in the target geometric model;

upon identification of a discrepancy in a feature of the target geometric model, computer programmable logic for iterating, a predetermined number of times, the process of generating the feature in the target geometric model; and

computer programmable logic for displaying the discrepancy to an operator at the client in the event of the server's failure to automatically correct a discrepancy in a feature of the target geometric model.

10. The system as in claim 9, wherein reference data for each feature from the source geometric model is compared with corresponding geometry in the target geometric model in order to identify discrepancies therein.

11. The system as in claim 10, wherein the computer programmable logic for comparing reference data comprises program code for extracting point cloud data from the source geometric model and comparing the extracted point cloud data with geometry in the target geometric model.

12. The system as in claim 10, wherein the computer programmable logic for comparing reference data comprises program code for extracting point cloud from the target geometric model and comparing the extracted point cloud with geometry in the source geometric model.

13. The system as in claim 9, wherein the computer programmable logic for generating a target geometric model comprises computer programmable logic for generating a user interrupt at the interrupt interface responsive to identifying a problem, in the event of the server's failure to automatically correct the identified problem, in generating the target geometric model.

14. A system for translating a source file in a first format to a target file in a second format, comprising:

a server configured to compare data of each of a plurality of features generated in a first format with target geometric data of respective features generated in a second format, the server operative to identify discrepancies in respective features therebetween;

said server further configured to automatically correct discrepancies of a feature generated in the second format prior to generating another feature; and

at least one client communicating with the server over a communication link.

15. The system as in claim 14, further comprising:

an interrupt interface configured to notify a user of the server's inability to automatically generate an accurate representation of a feature, generated in the first format, in the second format.

16. The system as in claim 14, wherein the server includes a storage device to store data related to each of the plurality of features.

17 The system as in claim 14, wherein the first and second formats are selected from the group having Pro/E, SDRC, Unigraphics, CATIA, SolidWorks, CATIA V5, and combinations thereof.

18. A feature based translation system, comprising:

a client/server environment;

a client having an interrupt interface; and

a server communicating with the client via the environment and having processing circuitry and an operation manager configured to compare source geometric data related to each of a plurality of features in a source geometric model with target geometric data for corresponding features in a target geometric model, said server further configured to correct feature discrepancies after generating the feature and prior to generating another feature.

19. The system of claim 18, further comprising:

an interrupt interface operative to notify a user of the presence of an identified

discrepancy in response to the server's inability to correct the feature discrepancies after a predetermined number of iterations, using alternative measurements during each iteration, to accurately generate the feature.

20. The system as in claim 18, wherein the operation manager further comprises program code for performing actions, including: evaluating architecture of the source geometric model including decomposing a model of the source geometric model.

21. The system as in claim 18, further comprising:

computer programmable logic for examining constructions history detailing the manner in which the source geometric model was built.

22. The system as in claim 18, further comprising:

computer programmable logic for extracting the source geometric data for each of the plurality of features from the source geometric model.

23. The system as in claim 18, further comprising:

computer programmable logic for generating the target geometric data based upon a construction history used to create each of the plurality of features of the source geometric model.

24. A method of generating a target geometric model from a source geometric model, comprising:

a) providing a server and a client of a computational geometry system having a user interface;

b) extracting source geometric data for each of a plurality of features from the source geometric model file;

c) using a target computer aided design (CAD) system, generating a target geometric model for each of the plurality of features having respective target geometric data;

d) detecting at least a) a discrepancy between a feature from the source geometric data and a corresponding feature from the target geometric data and b) a problem in generating the target geometric model; and

e) iterating step c), using different measurements during each iteration, in the event of a discrepancy between a feature from the source geometric data and a corresponding feature from the target geometric data in order to rectify the discrepancy.

25. The method as in claim 24, further comprising:

performing point cloud analysis in the event of detecting discrepancies; and

generating an interrupt at the user interface if the discrepancy is not rectified after performing a predetermined number of iterations using alternative measurements during each iteration.

26. The method as in claim 25, wherein after generating an interrupt, interrupting generation of the target geometric model.

27. The method as in claim 25, wherein after generating an interrupt, rectifying the discrepancy via the user interface.

28. The method as in claim 25, wherein after rectifying the discrepancy, clearing the interrupt via the user interface.

29. The method as in claim 28, wherein after clearing the interrupt, continuing to generate the target geometric model.

30. The method as in claim 25, wherein generating an interrupt comprises stopping generation of the target geometric model and displaying a notice to a user at the user interface requesting assistance with one of the discrepancy and the problem.

31. The method as in claim 30, wherein generating the target geometric model comprises substantially duplicating a process used to create the source geometric model based at least in part on identified architecture, mathematical basis, and definition of the geometry of the source geometric model.

32. The method as in claim 24, wherein, prior to extracting source geometric data, receiving a pre-existing source geometric model at the server and storing the source geometric model in memory of the server.

33. The method as in claim 32, wherein extracting source geometric data comprises evaluating the pre-existing source geometric model to determine architecture and construction history.

34. The method as in claim 25, wherein the user interface comprises an interrupt interface of a user display on the client.

35. The method as in claim 25, wherein generating an interrupt comprises providing visual cue within the target CAD system to remove the discrepancy and help fix the geometry..

36. A feature based translation system for generating a target geometric model from a source geometric model, comprising:

a processor having processing circuitry configured to compare source geometric data of each of a plurality of features in a source geometric model with target geometric data of respective features in a target geometric model, and operative to identify discrepancies in respective features therebetween;

the processor further configured to rectify discrepancies in a feature after generating the feature and prior to generating another feature among the plurality of features.

37. The system of claim 36, further comprising:

an interrupt interface operative to notify a user of the processor's inability to automatically generate an accurate representation of a feature of the source geometric model in the target geometric model.

38. The system of claim 36, wherein the processor is configured to iterate, a predetermined number of times using different measurements during each iteration, the process of generating a feature.

39. The system of claim 37, wherein the interrupt interface notifies a user of the processor's inability to rectify a discrepancy in a feature after performing the predetermined number of iterations to accurately generate the feature.

40. The system of claim 37, wherein the interrupt interface notifies a user of the presence of any identified discrepancies that are not automatically corrected by the processor in response to comparing the geometric data.

41. The system of claim 37, further comprising a computer readable medium having computer programmable logic embodied therein which when executed by the processing circuitry translates each feature of a source geometric model to a respective feature in a target geometric model.

42. The system of claim 36, wherein the process is further configured to invoke point cloud analysis subsequent to comparing geometric data of source and target models and identifying discrepancies in geometric features therebetween.